REMARKS

The captioned application had been unintentionally abandoned pursuant to 35 U.S.C. § 122(b)(2)(B)(iii) and 37 C.F.R. § 1.213(c) for failure to timely notify the USPTO of an international filing following a Request and Certification under 35 U.S.C. § 122(b)(2)(B)(i). Applicant's subsequent petition under 37 C.F.R. § 1.137(b) to revive this unintentionally abandoned application was granted August 18, 2004, and Applicant's Rescission of Nonpublication Request has been entered. The captioned application is currently pending appeal following Applicant's Notice of Appeal filed July 7, 2004. Applicant believes that these amendments and remarks are fully responsive under 37 C.F.R. § 1.116 to the Examiner's final office action dated January 7, 2004, and respectfully requests consideration of the same leading to the withdrawal of the Examiner's outstanding rejections and passage of the captioned patent application to issuance. If the Examiner agrees that the captioned application is in condition for allowance, Applicant respectfully requests that Applicant's Notice of Appeal be withdrawn without prejudice.

In the final office action dated January 7, 2004, claims 21-33 and 36-41 stand rejected under 35 U.S.C. § 103(a). In rejecting these claims, the Examiner cites Koerner et al. in view of Fujikura TLD, Waki in view of Fujikura TLD, Koerner et al. in view of Yin et al., Waki in view of Yin et al., Koerner et al. in view of Fujikura TLD and further in view of Yin et al., and finally Waki in view of Fujikura TLD and further in view of Yin et al. Applicant acknowledges and agrees that claims 34-35 are allowable because the prior art does not teach the invention defined by those claims. However, Applicant traverses the rejection of claims 21-33 and 36-41 over the references cited by the Examiner, and consider these claims to be patentable.

In particular, the Examiner has rejected claims 21, 24-25, 29, 31, 36, and 39-40 under Section 103(a) of the Patent Law as being unpatentable over Koerner et al. in view of Fujikura TLD. The Examiner contends that Koerner et al. discloses in the abstract a polyamideimide resin comprising the reaction product of an aromatic disocyanate, a tricarboxylic acid anhydride, and an aliphatic dicarboxylic acid. The Examiner states that Koerner et al. does not disclose the addition of a fluoropolymer or mineral filler to the polyamideimide. The Examiner further contends that Fujikura TLD discloses in the abstract a polyamideimide comprising finely powdered PTFE, where the added PTFE "contributes to the lubricative properties of the coating." Therefore, the Examiner takes the position that "it

would have been prima facie obvious to use PTFE particles in the coating of Koerner's invention to provide a lubricative property to the material."

Applicant traverses the combination of Koerner et al. in view of Fujikura TLD as rendering obvious Applicant's invention as defined by claims 21, 24-25, 29, 31, 36, and 39-40. Both Koerner et al. and Fujikura TLD are silent to Applicant's claimed molar ratio of "at least about 75 mole percent of trimellitic anhydride" and "about 25 mole percent or less of an acid, anhydride, or hydroxy functional reactant." *See*, *e.g.*, Claim 21 (as currently amended). In fact, Koerner et al. teaches away from Applicant's claimed range. Further, even assuming arguendo that one of the cited references taught Applicant's claimed molar ratio, the person of ordinary skill in the art would not have been motivated to combine these references at the time the invention was made to arrive at Applicant's invention.

Applicant's invention as defined by claims 21, 24-25, 29, 31, 36, and 39-40 is directed to craze resistance wire coatings made from certain polyamideimides. As currently amended, each of the rejected claims requires a polyamideimide requiring a specified ratio of certain components, namely "at least about 75 mole percent of trimellitic anhydride" and "about 25 mole percent or less of an acid, anhydride, or hydroxy functional reactant," each based on the stoichiometry of the diisocycanate component. The acid, anhydride, and hydroxy functional reactants are selected from "benzophenonetetracarboxylic anhydride, p-phthalic acid, o-phthalic acid, m-phthalic acid, 4,4'-oxy-bisbenzoic acid, dicarboxyl terminated poly(acrylonitrile-co-butadiene), adipic acid, diphenylsilanediol, tris(2-hydroxyethyl)cyanurate, cyanuric acid, melamine derivatives, a vinyl terminated silicone oil, and combinations thereof." Claim 1. Neither Koerner et al. nor Fujikura TLD teach or suggest Applicant's claimed molar ratio of trimellitic anhydride, acid, anhydride, and hydroxy functional reactants, and aromatic diisocyanates.

Koerner et al. is directed to modified aromatic polyamideimide resins that address the shortcomings of homopolymer polyamideimide resins and modified aromatic polyamideimide resins prepared in polar-aprotic solvents. In particular, Koerner et al. notes that the polar-aprotic solvents required by the prior art have several disadvantages when used in the preparation of polyamideimides, including encountered difficulties coating magnet wire or precoated magnet wire (*see*, col. 1, ll. 36-48), explosion and autoignition dangers (*see*, col. 1, ll. 49-53), viscosity and solids content deficiencies (*see*, col. 1, ll. 54-66), high cost, and others. *See generally*, col. 2, ll. 18-60 (objects of the invention). Thus, Koerner et al. is directed towards preparing polyamideimides in "conventional phenolic solvents like cresylic acid, phenols, cresols, and the like." Col. 1, ll. 15-16. Koerner et al. is silent to

Applicant's claimed craze-resistant polyamideimide compositions, and importantly, Koerner et al. does not disclose Applicant's claimed molar range of "at least about 75 mole percent of trimellitic anhydride" and "about 25 mole percent or less of an acid, anhydride, or hydroxy functional reactant" relative to the diisocyanate.

In contrast, Koerner et al. specifies a range that requires a minimum of 50 mole percent and a maximum of 90 mole percent tricarboxylic acid component. This range is different from Applicant's claimed range, and Koerner et al. does not teach or suggest Applicant's claimed range. In fact, the range of Koerner et al. cannot suggest Applicant's claimed range and reach Applicant's claimed invention of a craze resistance wire coating because nearly half of the range disclosed by Koerner et al. will fail to give a craze resistance polyamideimide coating as taught by Applicant. Applicant demonstrates in his Example 1 that a polyamideimide prepared from a molar percentage of TMA of 70% (i.e. less than the molar percentage required by claims 21, 24-25, 29, 31, 36, and 39-40) does not deliver a craze resistant wire coating.

That Koerner et al. does not teach Applicant's claimed molar ratio is not surprising. Properties of interest to Koerner et al. are "good thermal stability, toughness, good flexibility and high molecular weight." Col. 4, ll. 8-9. Craze resistance is simply not an objective of Koerner et al. Instead, the specific objects of Koerner et al. are to provide "an improved polyamide-imide resin," (col. 2, l. 19), a "resin which can be applied to fine wire as a smooth and continuous coating" (col. 2, ll. 38-39), and "a modified aromatic polyamide-imide resin having thermal stability and toughness approaching non-modified homopolymer aromatic polyamide-imide resins" (col. 2, ll. 40-43). None of these objects or any others disclosed in Koerner et al. are directed to craze resistance. Thus, Koerner et al. cannot suggest in any way Applicant's claimed invention by disclosing a molar range of tricarboxylic acid component between 50% and 90%. This conclusion is not surprising because Koerner et al. is not trying to achieve a craze resistant wire coating. Moreover, Koerner et al. teaches away from Applicant's claimed range by requiring that the tricarboxylic acid component not exceed 90%. Such a requirement precludes nearly half of Applicant's claimed molar ratio that does provide a craze resistant coating.

Finally, the Examiner's recitation of the molar composition of Example VI in Koerner et al., fails to render obvious Applicant's invention as defined by claims 21, 24-25, 29, 31, 36, and 39-40. The recitation of a single species falling within a range does not suggest the range, and such a recitation is unavailing in the context of Section 103. Further, that every other one of the exemplified embodiments set forth in Koerner et al., are well

outside Applicant's claimed molar ratio further casts doubt on the ability of Koerner et al.'s Example VI to suggest Applicant's claimed range of molar ratios. Koerner et al. selected its range with care, indicating that too much of or too little of the aliphatic dicarboxylic acid is not desired, and would lead to undesirable molecular weights (col. 6, ll. 22-28), or solubility and flexibility problems (col. 6, ll. 28-35). Further, Koerner et al. teaches away from nearly half of the range claimed by Applicant, stating that "the amount of the aliphatic dicarboxylic acid must be at least 10 mol percent of the aromatic tricarboxylic acid anhydride component." Col. 6, ll. 22-24. This requirement is based on Koerner et al.'s observation that "too little of or too small an acid results in a low molecular weight polymer or a prepolymer," which is undesirable. Col. 6, ll. 26-28. Simply stated, a reference that discourages the skilled artisan from entertaining a molar composition recited in the claimed invention cannot be held to render obvious that claimed invention. Teaching away is the antithesis of obviousness, and eviscerates the motivation necessary for the presentation of a prima facie case of obviousness.

Further, as noted by the Examiner, Koerner et al. is silent to the final requirement of Applicant's claims 21, 24-25, 29, 31, 36, and 39-40, namely the added particulate components, such as fluoropolymers and mineral fillers, and cites Fujikura LTD in combination to overcome this insufficiency of Koerner et al.

Fujikura LTD discloses a homopolymer polyamideimide resin that includes a "finely powdered fluorine-contg. resin." Abstract. Further, Fujikura LTD refers to this resin as a lubricative resin. However, unlike Applicant's claimed craze resistant wire coating, Fujikura LTD discloses only a homopolymer polyamideimide, not a polyamideimide that includes "(i) an aromatic diisocyanate, (ii) at least about 75 mole percent of trimellitic anhydride; and (iii) about 25 mole percent or less of an acid, anhydride, or hydroxy functional reactant." Homopolymer polyamideimide resins are formed only from a tricarboxylic acid component (or a derivative thereof) and a diamine component (or a derivative thereof). Fujikura LTD specifically refers to tricarboxylic acid anhydrides as the tricarboxylic acid component, and diisocyanates as the diamine component of the homopolymer polyamideimide resins disclosed therein. Importantly, absent from this resin is the third component required by Applicant's resins as defined in claims 21, 24-25, 29, 31, 36, and 39-40, namely the "one or more acid, anhydride, or hydroxy functional reactants." Therefore, Fujikura LTD not only fails to teach Applicant's claimed molar ratio of components, Fujikura LTD also fails to teach the claimed ingredients that require "an acid, anhydride, or hydroxy functional reactant."

Therefore, neither reference teaches a required element of the rejected claims, the recited molar ratio, and thus Applicant believes that the combination of references cited by the Examiner fails to render obvious Applicant's invention defined by claims 21, 24-25, 29, 31, 36, and 39-40. Further, even if the foregoing were not true, the combination of Koerner et al. and Fujikura LTD is improper because the person of ordinary skill in the art would not have been motivated to combine the teachings of these two references at the time the invention was made by Applicant.

Koerner et al. states that their polyamideimide resins are comparable to conventional polyamideimide resins and "are fully useful as such resins as insulation materials in the electrical industry." Abstract. Therefore, Koerner et al. provides no motivation for the skilled artisan to alter the composition. The composition taught by Koerner et al. does not need any improvement. Hence, the person of ordinary skill in the art at the time the invention was made would not be motivated to combine the teachings of Koerner et al. and Fujikura LTD to add anything, let alone Applicant's claimed fluoropolymer or mineral filler. Further, Koerner et al. describes modified aromatic polyamideimide resins not homopolymer polyamideimide resins, and Koerner et al. even teaches away from the general use of homopolymer polyamideimide resins due to numerous disadvantages associated with such homopolymer resins, such as those stated above. Further, Fujikura LTD does not suggest that the lubricative properties observed in the homopolymer polyamideimides described therein would be observed or achieved in the modified aromatic polyamideimides described by Koerner et al. Therefore, the skilled artisan would not look to a reference that taught a new property in this old art, because frankly, Koerner et al. teaches that the art has moved past the teachings of Fujikura LTD. Therefore, neither reference motivates the person of ordinary skill in the art to make the combination suggested by the Examiner. The mere existence of two teachings does not by itself create the motivation to combine required by the Patent Law.

Finally, the Examiner suggests that the skilled artisan "would . . . use PTFE particles in the coating of Koerner's invention to provide a lubricative property to the material." However, there is no suggestion in Fujikura LTD that such is possible, and Koerner et al. is equally silent to the possibility that the modified polyamideimides would be lubricative if fluoropolymer was added. The effect may be limited to the homopolymers described by Fujikura LTD.

In addition, none of the objects recited by Koerner et al. are directed to lubricative properties. In fact, the object of providing a "resin which can be applied to fine

wire as a smooth and continuous coating" (col. 2, ll. 38-39) suggests that lubricative properties are not deficient in the resins disclosed by Koerner et al. Further, Koerner et al. states, "The present invention provides an improved polyamide-imide resin, an improved method of producing polyamide-imide resins, and an improved polyamide-imide resin solution meeting all of the above-listed objects of the invention." Col. 14, ll. 38-43 (emphasis added). "The polyamide-imide resins of the invention . . . can be applied relatively easily from solutions as smooth and continuous coatings." Col. 14, ll. 42-46. Thus, Koerner et al. does not provide any motivation to the person of ordinary skill in the art to explore the possibility of lubricative properties in the polyamideimides disclosed in that reference, and especially not by using the teachings of Fujikura LTD that are restricted to homopolymer polyamideimides.

Therefore, Applicant respectfully suggests that the combination is improper and fails to reach Applicant's claimed invention. The skilled artisan would not be motivated to combine the teachings of a reference directed to modifying the properties in a homopolymer polyamideimide resin and use the same to modify the properties of a modified aromatic polyamideimide resin, especially when the latter reference specifically disparages such homopolymer polyamideimide resins. Further, there is no need to make any modification at all in the polyamideimide resins disclosed by Koerner et al. because that references suggests that the modified aromatic polyamideimide resin have solved the shortcomings of homopolymer polyamideimide resins, such as those disclosed by Fujikura LTD, including having a *smooth and continuous coating*. Such a smooth and continuous coating does not motivate the skilled artisan to further tinker with the composition in order to add a lubricative property.

Applicant believes that the foregoing arguments indicate that the combination of Koerner et al. in view of Fujikura LTD is improper, and regardless fails to reach each and every element of Applicant's invention as defined by claims 21, 24-25, 29, 31, 36, and 39-40. Therefore Koerner et al. in view of Fujikura LTD cannot render those claims obvious and Applicant respectfully requests reconsideration of the Examiner's rejection of those claims over the cited references leading to its withdrawal.

The Examiner has also rejected claims 21-31 and 36-41 under Section 103(a) as being unpatentable over Waki in view of Fujikura LTD. The Examiner contends that Waki discloses in the abstract a polyamideimide resin comprising the reaction product of a tricarboxylic acid anhydride, citric acid, and diisocyanate. The Examiner indicates that Waki teaches that citric acid must be used "in amounts of above 5 mole percent," relative to the

amount of diisocyanate. The Examiner also notes that Waki teaches that "[a]s the amount of trimellitic anhydride is increased, the thermal resistance increases." Finally, the Examiner states that Waki teaches that a small amount of the trimellitic anhydride may be replaced with benzophenone tetracarboxylic anhydride for "enhancing heat resistance." The Examiner acknowledges that like Koerner et al., Waki "does not specifically disclose the applicant's claimed combination of materials having the claimed molar ratio." Regarding Applicant's required particulate component, the Examiner again relies on Fujikura LTD, stating that "it would have been prima facie obvious to use PTFE particles in the coating of Waki's invention to provide a lubricative property to the material."

Applicant traverses the combination of Waki in view of Fujikura TLD as rendering obvious Applicant's invention as defined by claims 21-31 and 36-41. Neither Waki nor Fujikura TLD teach Applicant's claimed molar ratio of "at least about 75 mole percent of trimellitic anhydride" and "about 25 mole percent or less of an acid, anhydride, or hydroxy functional reactant." Further, even assuming arguendo that one of the cited references taught Applicant's claimed molar ratio, the person of ordinary skill in the art would not have been motivated to combine these references at the time the invention was made to arrive at Applicant's invention, and therefore the combination is improper.

Applicant's invention as defined by claims 21-31 and 36-41 is directed to craze resistance wire coatings made from polyamideimides requiring a specified ratio of ingredients, namely at least about 75 mole percent of trimellitic anhydride and about 25 mole percent or less of an acid, anhydride, or hydroxy functional reactant, each stoichiometrically based substantially on the diisocycanate component.

Waki is directed to polyamideimide resins that are formed from "substantially equal molar amounts of (a) a tricarboxylic acid and/or an anhydride thereof containing at least 5 mole % of citric acid and (b), [sic] a diisocyanate and/or a derivative obtained by masking diisocyanate with phenolic compounds." Col. 1, l. 65 to col. 2, l. 2. Further, Waki indicates that the upper limit for the tricarboxyic acid component cannot be exceeded, stating that "the proportion of citric acid to the tricarboxyic acid and/or derivative thereof is required to exceed 5 mol %, preferably 8 mol %." Col. 3, ll. 2-4 (emphasis added). For the lower limit, Waki states that "it is preferable to increase the proportion of the trimellitic acid and/or the anhydride thereof up to at least 40 mol %." Col. 3, ll. 19-21. That maximum and minimum do not correspond to Applicant's claimed range of "at least about 75% of trimellitic anhydride." Waki's upper limit falls short, and its lower limit is too low.

The Examiner contends that "[s]ince the individual components have been suggested with motivation for altering the molar amounts . . . it would have been prima facie obvious to arrive at the applicant's claimed coating mixture." Applicant respectfully disagrees. Waki has already set forth with particularity the molar ratio of the disclosed components, namely preferably more than 40%, and absolutely less than 95% trimellitic acid. This range does not match the molar ratio of at least about 75 mole percent required by Applicant's claimed invention. Regarding any motivation to alter the molar amounts, Waki states as indicated by the Examiner that "[t]he thermal resistance increases as the proportion of trimelletic [sic] anhydride in the tricarboxylic acid is increased." Col. 3, ll. 15-17. However, this proportion cannot be increased above 95% and still meet the other requirements of Waki that the citric acid is required to exceed 5%. Thus, Waki cannot reach Applicant's claimed range which includes mole percents of trimellitic anhydride that are greater than 95%. In fact, Applicant's Examples 5 and 6 teach compositions that include 97.5 and 98 mole percent, respectively. These levels of trimellitic anhydride are precluded by the teachings of Waki, which states that citric acid "is required to exceed 5 mol %." Col. 3, ll. 3-4.

The Examiner also indicates that Waki discloses adding polyhydric alcohols, benzophenone tetracarboxylic anhydride, phthalic acids, or adipic acid in place of trimellitic anhydride to prepare the disclosed resins. This information strengthens Applicant's arguments, because such additives further decrease the relative amount of trimellitic anhydride in the resins disclosed by Waki. In particular, Waki states, "The proportion of the polyhydric alcohol to the reaction product is particularly important. It is desired to be in the range of 0.05 to 0.7 mol per mol of the tricarboxylic acid used in the reaction." Col. 5, ll. 61-64 (emphasis added). Thus, Waki requires at least 5 additional mole percent and as much as 70 additional mole percent of the polyhydric alcohol, further reducing the amount of trimellitic anhydride to as low as 28 mole percent. Applicant's claimed invention requires a minimum relative molar ratio of trimellitic anhydride of about 75 mole percent. Teachings that encourage the skilled artisan to deviate to lower and lower mole percentages of trimellitic anhydride, to as low as 28 mole percent, are the antithesis of motivating to select ratio that must be at least about 75 mole percent, as the Examiner contends. Even in the polyamideimdes disclosed by Waki that include only citric acid and diisocyanate, the trimellitic anhydride can be as low as 40 mole percent. Applicant's claimed craze resistance coating does not include molar ratios of trimellitic anhydride that are less than 75 mole percent. For example, Applicant's Example 1 indicates that when only 70 mole percent

trimellitic anhydride is used in the wire coating composition, insufficient craze resistance is achieved at any of three selected curing speeds. *See*, Table 1.

Again, and parallel to Koerner et al. discussed above, that Waki cannot reach Applicant's claimed range is not surprising. Waki is concerned with the solubility of polyamideimide resins, and does not contemplate polyamideimide compositions that are craze resistant. Waki states, "It is, therefore, an object of this invention to provide a heat-resistant synthetic resin composition containing a polyamide imide resin which is soluble in a phenolic solvent and permits quite free combination of starting materials." Col. 1, ll. 54-58.

Regardless, Waki clearly teaches away from Applicant's claimed molar ratio of "about 25 mole percent or less of an acid, anhydride, or hydroxy functional reactant." Waki states, "For improvement of the solubility in organic solvents, the proportion of citric acid to the tricarboxylic acid and/or a derivative thereof is required to exceed 5 mol %, preferably 8 mol %." Col 3, ll. 1-4. Waki also states, "If the proportion is less than 5 mol %, ... [t]he resultant resin composition, therefore, becomes impracticable." Col. 3, ll. 5-8. Waki precludes polyamideimides formed from mixtures containing less than 5 mol % citric acid stating, "The solubility in organic solvents increases in proportion as the proportion of citric acid is increased." Col. 3, ll. 9-10. Waki also states that "the reaction consumes much time, tends to entail secondary reactions, and fails to produce a resin composition of amply high polymerization degree when the solids content is less than 35%." Col. 4, ll. 30-34. Thus, Waki teaches away from Applicant's claimed molar range, and therefore cannot constitute a valid basis for rendering obvious Applicant's claimed molar range.

Applicant teaches that the addition of one or more acid, anhydride, or hydroxy functional reactants to trimellitic anhydride and a diisocyanate to form a polyamideimide resin delivers craze resistance. Applicant's claimed range includes acid, anhydride, and/or hydroxy functional reactants present at levels below 5 mole percent. In particular, Examples 5 and 6 are both craze resistant coatings, and in both of those examples, the acid, anhydride, and/or hydroxy functional reactants are present at levels below 5 mole percent, namely 2.5% and 2%, respectively. These examples, and the claims that includes them cannot be rendered obvious by a reference that requires the acid, anhydride, and/or hydroxy functional reactants (e.g. citric acid) to be used in at least "5 mol %."

Even assuming arguendo that a case could be made to render obvious the claimed molar range, or to motivate the skilled artisan to experiment where Waki tells her not to, the Examiner has not pointed to any motivation provided by the cited references to make the combination made here, namely, Waki in view of Fujikura LTD. Again, the Examiner

acknowledges that Waki fails to teach or suggest the additional component required by Applicant's invention as defined by claims 21-31 and 36-41, namely the fluoropolymer or mineral filler, and relies once again on Fujikura LTD. For the same reasons as given for Koerner et al., Waki is empty of motivation to add any additional ingredients.

Like Koerner et al., Waki seeks to improve the prior art. Waki contends that it has succeeded and does not need any help making its polyamideimide composition better. Waki states that the disclosed polyamideimide compositions may be used "for the production of insulating varnishes (for coated wires, films, and laminated sheets)." Col. 7, ll. 5-7. Waki does not suggest in any way that the disclosed resins suffer from any deficiency. Therefore, Waki fails to motivate the person of ordinary skill in the art to further modify the resins of Waki, and certainly not in the manner the Examiner suggests, by including other components, such as Applicant's claimed fluoropolymer or mineral filler.

The Examiner has also rejected claim 32 under Section 103(a) as being unpatentable. The Examiner has made two combinations of references, Koerner et al. in view of Yin et al., or Waki in view of Yin et al. Further, the Examiner has also rejected claim 33 under Section 103(a) as being unpatentable over two combinations of references, Koerner et al. in view of Fujikura TLD and further in view of Yin et al., or Waki in view of Fujikura TLD and further in view of Yin et al.

The Examiner is kindly directed to the declaration of Dr. James J. Xu, filed under 37 C.F.R. § 1.131, and included herewith. The declaration with the accompanying Exhibit A establishes that the invention as defined by claims 32-33 was made prior to January 29, 2001, the filing date of Yin et al. Therefore, Applicant believes that Yin et al. is not a valid reference under Section 103(a) and respectfully requests that it be removed from consideration. The removal of Yin et al. from the combinations recited by the Examiner in the rejections of claims 32-33 renders those rejections moot, as only Koerner et al. and Waki remain. Both Koerner et al. and Waki have been argued by Applicant as insufficient in combination to render obvious the base claims from which claims 32-33 depend, and therefore are similarly insufficient in defeating the patentability of claims 32-33.

In view of the foregoing arguments, Applicant respectfully requests reconsideration of the standing rejections of claims 21-33 and 36-41 under Section 103(a) in the captioned application, leading to their withdrawal. Applicant considers the instant application to be in condition for allowance, and request that the Examiner pass the same to issuance.

Respectfully submitted,

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